



TETRA TECH NUS, INC.

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Superfund Records Center

SITE: Centredale

BREAK: 3.4

OTHER: 25.27

RACI-EPA-3772

Contract No. 68-W6-0045

April 30, 2002

Ms. Anna Krasko
U.S. Environmental Protection Agency
One Congress Street, Suite 1100, HBO
Boston, Massachusetts 02114-2023

Subject: Transmittal of Data from Sediment Re-sampling, Allendale Dam
Centredale Manor Restoration Project, Technical Assistance
RAC I W. A. No. 106-ANLA -016P

Dear Ms. Krasko:

In July 2001 EPA requested Tetra Tech NUS, Inc. to resample four sediment stations downstream of the Allendale Dam. These stations were originally sampled as a part of the Woonasquatucket River Sediment Investigation in October and November 1999. The intention of the re-sampling effort was to determine possible effects to the sediment from the widening of the breach in the Allendale Dam during flood stage conditions in March 2001. This letter and its attachments present the data from this re-sampling effort.

Tetra Tech NUS, Inc. (TtNUS) returned to the area in July 2001, and located three of the four station markers that were placed in this area during the 1999 sampling efforts. Stations WRL-SD-2041, 2042, 2043 and LPX-SD-2045 were sought for re-sampling. Station LPX-SD-2045 was not found, and the station was remarked as LPX-SD-2045B. To augment the data set, EPA requested TtNUS locate additional stations in any new depositional areas present. Two such areas were found and two stations (WRL-SD-2071 and LPX-SD-2072) were added to account for these areas. Thus a total of six stations were located and sampled under this effort.

Each of the stations were surveyed with differential GPS, and location coordinates were imported into the project GIS data management system. The GPS survey found that stations 2045 and 2045B were within 3 feet of each other, so they are considered for the purposes of this letter as the same location. Locations of the stations are presented on Figure 1, attached.

Sediments at each of the six stations were inspected by a wetlands scientist to identify most recent deposits. The samples were collected from those most recent deposits to attempt to collect only those sediments that may have been transported to these locations during the recent flood event. As a result, stations were sampled from the intervals of between 0-0.2 feet and 0-0.5 feet in depth. Observations by the field scientists and the selected sample intervals are presented on the Field Sample Data Sheets, attached to this letter.

Samples were collected for laboratory analysis of dioxins (per method 8290), TAL metals (per CLP ILM04.1), and organic contaminants (SVOCs and pesticides and PCBs per CLP OLM04.2). Data from the contract laboratories were provided to EPA and TtNUS chemists for validation. Data validation summary memoranda were provided, and are attached to this letter.



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Dioxin TEQ values from the sampling conducted as described above were compared with data from samples collected at these stations from the 0-0.5 foot interval in October and November 1999. The 1999 results were published in the Technical Memorandum for the Woonasquatucket River Sediment Investigations, Centredale Manor Restoration Project Site (TtNUS, June 2000). This comparison is presented on Table 1, attached to this letter.

These results show that the new sediments transported to the stations evaluated during the breach widening in 2001 appear to have lower concentrations of dioxins than the surface sediments sampled during 1999. However, this observation is based only on these limited data points, and any overall trend would have to be determined using a larger data set and a series of sampling efforts over time.

If you have any questions about this material, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Stephen S. Parker'.

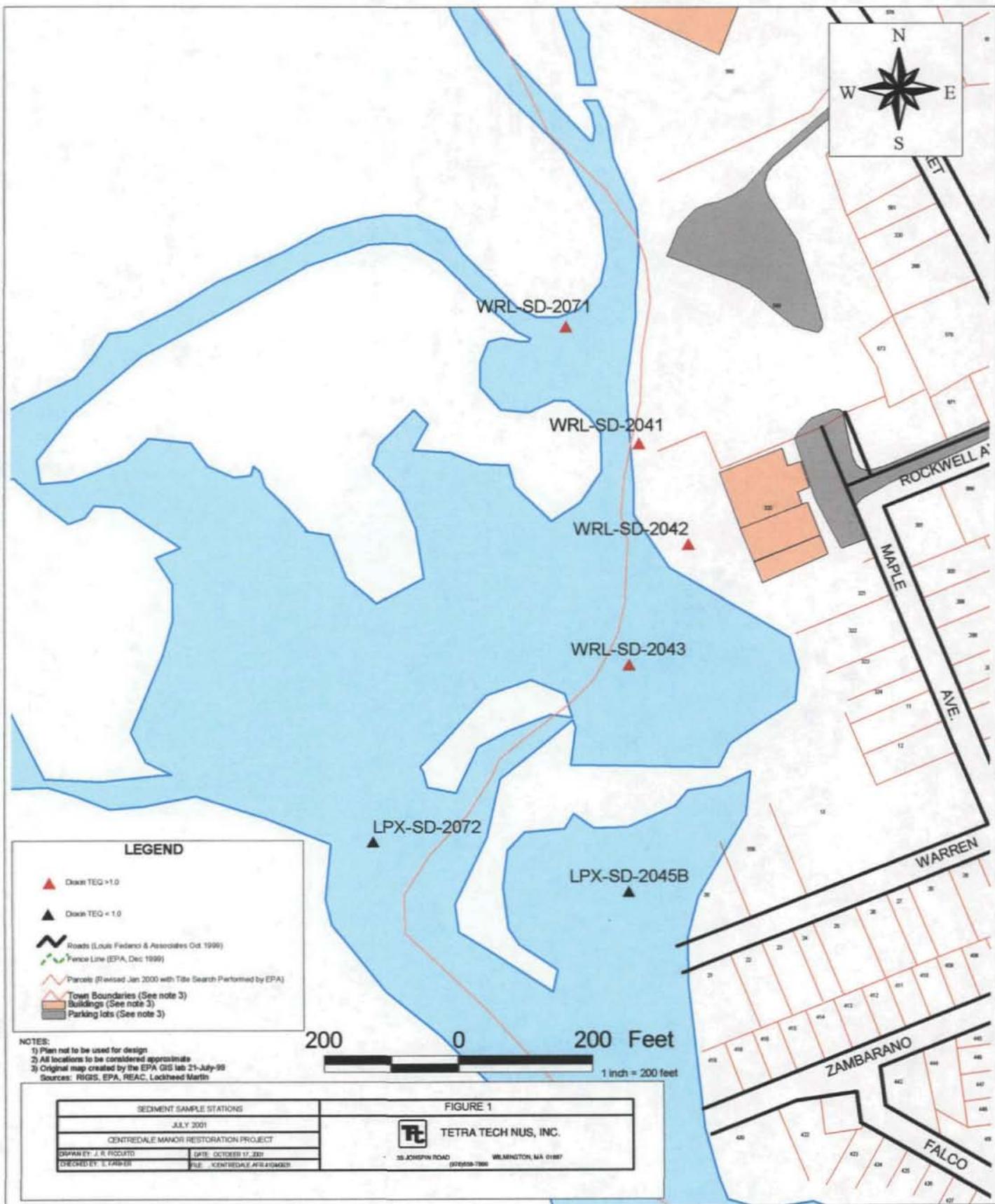
Stephen S. Parker
Project Manager

PMO - @

SSP:rp

Enclosure

c: H. Horahan (EPA) w/o enc.
A. Ostrofsky/L. Guzman (TtNUS) w/enc.
File N4104-1.0 w/o enc./N4104-3.4 w/enc.



LEGEND

- ▲ Dioxin TEQ >1.0
- ▲ Dioxin TEQ <1.0
- Roads (Louis Federico & Associates Oct. 1996)
- Fence Line (EPA, Dec 1999)
- Parcels (Revised Jan 2000 with Title Search Performed by EPA)
- Town Boundaries (See note 3)
- Buildings (See note 3)
- Parking lots (See note 3)

- NOTES:**
- 1) Plan not to be used for design
 - 2) All locations to be considered approximate
 - 3) Original map created by the EPA GIS lab 21-July-99
- Sources: RWGIS, EPA, REAC, Lockheed Martin

200 0 200 Feet
1 inch = 200 feet

SEDIMENT SAMPLE STATIONS		FIGURE 1	
JULY 2001		TETRA TECH NUS, INC.	
CENTREDALE MANOR RESTORATION PROJECT			
DESIGNED BY: J. R. RICCIUTO	DATE: OCTOBER 17, 2001	35 JOSEPH ROAD	WILMINGTON, MA 01897
DRAWN BY: S. YARBOR	FILE: CENTREDALE_APR_2104001	(578)558-1700	

Original includes color coding.

TABLE 1
DIOXIN TEQ IN SEDIMENTS
LOCATIONS DOWNSTREAM OF ALLENDALE DAM
CENTREDALE MANOR RESTORATION PROJECT
NORTH PROVIDENCE RHODE ISLAND

Location	Oct/Nov 1999 Samples		July 2001 Samples	
	Concentration ug/kg	Depth of Sample (ft)	Concentration ug/kg	Depth of Sample (ft)
WRL-SD-2071	NS	NA	1.8	0-0.2
WRL-SD-2041(2)	3.17	0-0.5	2.0, 0.5	0-0.2
WRL-SD-2042	2.05	0-0.5	1.7	0-0.3
WRL-SD-2043	3.27	0-0.5	1.2	0-0.2
LPX-SD-2072	NS	NA	0.5	0-0.5
LPX-SD-2045 and 2045B (1)	7.67	0-0.5	0.73	0-0.3

- (1) - LPX-2045 marker from 1999 could not be found, 2045B was sampled in same vicinity 7/01
(2) - Duplicate samples collected 7/01 at this location



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET - SEDIMENT

Site Name: CENTREDALE MANOR
 Tetra Tech NUS Inc. Sample ID: WRL-SD-2041-02

Tetra Tech NUS Job No./PMS 0400-0242
 QC/Replicate Information: WRL-SD-2041-02 (if applicable)

Sample Method/Gear Used: SCOOPULA + BOWL Sediment Depth Collected: 0 - 0.2 feet

Sample Date & Time: 7/24/2001 1450 hours Duplicate: 1500 hours
 (24-hour)

Sampler(s): K. O'Neill D. MacDougall

Form Completed By: [Signature]
 (Signature)

Water Depth: 0 (SATURATED) ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)

How were samples collected? wading from bank from boat Other _____

Type of Sample: (Check all that apply)

- Stream/River
- Wetland
- Pond
- Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Composite

Other: _____
 Weather: _____

Sediment Description: ORGANIC SILTY FINE SAND
EXPOSED SEDIMENT
OPEN WATER WITHIN 6 INCHES (LINEAR
SAMPLE TAKEN WITHIN 1 FT OF
EXISTING STAKE
 *include DIUF lot # in "other" above

Surface Water Quality: Temp. not recorded °C pH nr Spec. Cond. nr uS/cm DO nr mg/L ORP nr mV Turbidity nr NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	<input checked="" type="checkbox"/>	
TAL Metals	<input checked="" type="checkbox"/>	
Dioxin	<input checked="" type="checkbox"/>	
AVS/SEM	<input type="checkbox"/>	
Toxicity Assess.	<input type="checkbox"/>	
Benthic Comm. Assessment	<input type="checkbox"/>	
Ekman Grabs:	<input type="checkbox"/>	
Chemistry	<input type="checkbox"/>	
Toxicity:	<input type="checkbox"/>	
BCA: <u>1</u> each	<input type="checkbox"/>	

Tt NUS Form 0005A

Note River level was at base of stake. Collected sed. from inside area of exposed sediments



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET - SEDIMENT

Site Name: CENTREDALE MANOR
 Tetra Tech NUS Inc. Sample ID: WLU-SD-2042-07

Tetra Tech NUS Job No./PMS 0400-0242
 QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: Gooprol + Bowl Sediment Depth Collected: 0-0.3 feet

Sample Date & Time: 7/24/2001 1525 hours Duplicate: 0.5 hours
 (24-hour)

Sampler(s): K. O'Neill B. MacDougall

Form Completed By: [Signature]
 (Signature)

Water Depth: 0 (SATURATE) ft. Flow: None Low / Moderate / Fast (Circle Appropriate)

How were samples collected? wading from bank from boat Other WALCED IN

Type of Sample: (Check all that apply)

- Stream/River
- Wetland
- Pond
- Grab
- Other: FLOODPLAIN
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Composite

Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

SILT SAND SOME ORGANICS
HIGH WATER DEPOSITION AREA
 *include DIUF lot # in "other" above

Surface Water Quality: Temp. not recorded °C pH nr Spec. Cond. nr uS/cm DO nr mg/L ORP nr mV Turbidity nr NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	<input checked="" type="checkbox"/>	
TAL Metals	<input checked="" type="checkbox"/>	
Dioxin	<input checked="" type="checkbox"/>	
AVS/SEM	<input type="checkbox"/>	
Toxicity Assess.	<input type="checkbox"/>	
Benthic Comm. Assessment	<input type="checkbox"/>	
Ekman Grabs:	<input type="checkbox"/>	
Chemistry _____	<input type="checkbox"/>	
Toxicity: _____	<input type="checkbox"/>	
BCA: <u>1 each</u>	<input type="checkbox"/>	

LOCATION HAD BEEN NONE OF A DEPRESSION IN FIRST RD OF SAMPLING IT HAS FILLED IN. RACCOON TRACKS

River ←
 2042 [box] DIRT POND
 Floodplain
 Boys + Greyscar [box]
 BALL FIELD [box]

low area (depression)
 ↓
 NO dropped leaf cover

Note: Typically found last falls leaves covered by newer sediment (n.3ft) sampled top portion only

NO LEAF MATTER PRESENT WASHED AWAY (PROB. HIGH WATER)
 ROOT MAT THRU SOIL

Estimated Area Sampled _____ ft.²



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET - SEDIMENT

Site Name: CENTREDALE MANOR
 Tetra Tech NUS Inc. Sample ID: WYLL-SD-2003-02

Tetra Tech NUS Job No./PMS 0400-0242
 QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: Bowl + Spoon Sediment Depth Collected: 0.02 feet
 Sample Date & Time: 7/25/2001 0920 hours Duplicate: _____ hours
 (24-hour)
 Sampler(s): K. O'Neill D. MacDougall
 Form Completed By: [Signature] (Signature)
 Water Depth: 0 (SATURATE) ft. Flow: (None) Low / Moderate / Fast (Circle Appropriate)
 How were samples collected? ___ wading X from bank ___ from boat Other _____

Type of Sample: (Check all that apply)
 Stream/River Trip Blank*
 Wetland Rinsate Blank*
 Pond Field Duplicate collected
 Grab Composite
 Other: _____
 Weather: _____
 Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)
SILTY SAND
w/ ORGANIC MATTER
 *include DIUF lot # in "other" above

Surface Water Quality: Temp. ___ not recorded ___ °C pH nr Spec. Cond. ___ nr ___ uS/cm DO ___ nr ___ mg/L ORP ___ nr ___ mV Turbidity ___ nr ___ NTU

ANALYSIS	Check
SVOC/Pest/PCB	<input checked="" type="checkbox"/>
TAL Metals	<input checked="" type="checkbox"/>
Dioxin	<input checked="" type="checkbox"/>
AVS/SEM	<input type="checkbox"/>
Toxicity Assess.	<input type="checkbox"/>
Benthic Comm. Assessment	<input type="checkbox"/>
Ekman Grabs:	<input type="checkbox"/>
Chemistry	<input type="checkbox"/>
Toxicity:	<input type="checkbox"/>
BCA: <u>1</u> each	<input type="checkbox"/>

NOTES/SKETCH:

FOLLOW BLUE FLAGGING

EMERGENT WETLAND

ISLAND

Not passable TOO HUMPKY

Channel

SAMPLES COLLECTED WITHIN 20 FT OF STAKE

parking lot

ROAD

SAMPLE LOCATION

COMPOSITES FROM SEVERAL SMALL PONDED AREAS MOST OF REGION SCOURED w/ SAND w/in 20' of stake

Estimated Area Sampled _____ ft.²



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR ^{LPX -}
 Tetra Tech NUS Inc. Sample ID: ~~111-51~~ - 2045A - 00

Tetra Tech NUS Job No./PMS 0400-0242
 QC/Replicate Information: MS/MS (if applicable)

Sample Method/Gear Used: Bowl + Scoopula Sediment Depth Collected: 0-03 feet
 Sample Date & Time: 7/25/2001 0840 hours Duplicate: hours
 (24-hour)
 Sampler(s): K. O'Neill B. MacDougall
 Form Completed By: [Signature] (Signature)

Type of Sample: (Check all that apply)
 Stream/River Trip Blank*
 Wetland Rinsate Blank*
 Pond Field Duplicate collected
 Grab Composite
 Other: MATRIX SPIKE
 Weather:

Water Depth: 0 (SATURATED) ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)
 How were samples collected? wading from bank from boat Other

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)
ORGANIC SAND
W/ STICKS, ROOTS, + GROSS MATERIAL
 *include DIUF lot # in "other" above

Surface Water Quality: Temp. not recorded °C pH nr Spec. Cond. nr uS/cm DO nr mg/L ORP nr mV Turbidity nr NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	<input checked="" type="checkbox"/>	<p>ISLAND</p> <p>3 SAMPLE LOCATION</p> <p>* Sampled "newest" sediments</p> <p>Estimated Area Sampled <u> </u> ft.²</p>
TAL Metals	<input checked="" type="checkbox"/>	
Dioxin	<input checked="" type="checkbox"/>	
AVS/SEM	<input type="checkbox"/>	
Toxicity Assess.	<input type="checkbox"/>	
Benthic Comm. Assessment	<input type="checkbox"/>	
Ekman Grabs: Chemistry <u> </u>	<input type="checkbox"/>	
Toxicity: <u> </u>	<input type="checkbox"/>	
BCA: <u>1</u> each	<input type="checkbox"/>	



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR

Tetra Tech NUS Job No./PMS 0400-0242

Tetra Tech NUS Inc. Sample ID: WRL-SD-2701-01

QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: 1 Rowel + Bow Sediment Depth Collected: 0-0.2 feet

Sample Date & Time: 7/24/2001 1615 hours Duplicate: _____ hours
(24-hour)

Sampler(s): K. O'Neill D. MacDougall

Form Completed By: _____

(Signature)

Water Depth: 0 (SATURATED) ft. Flow: None / None / Low / Moderate / Fast (Circle Appropriate)

How were samples collected? ___ wading X from bank ___ from boat Other _____

Type of Sample: (Check all that apply)

- Stream/River
- Wetland
- Pond
- Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Composite

Other: _____
Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

FINE SAND SILT
ORGANIC w/ LEAF

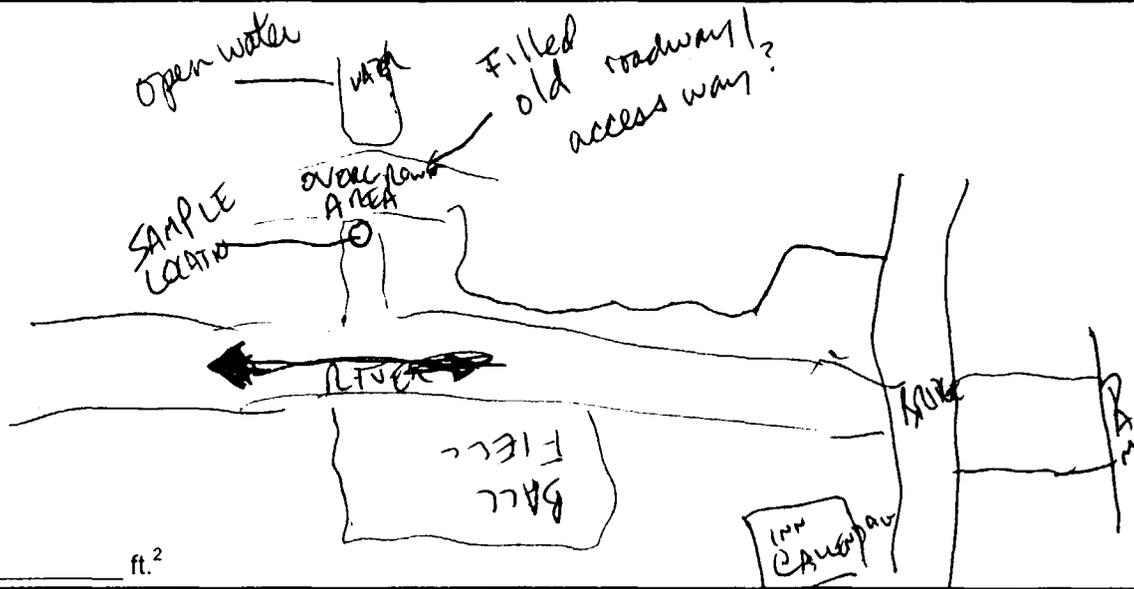
*include DIUF lot # in "other" above

Surface Water Quality: Temp. ___ not recorded ___ °C pH nr Spec. Cond. ___ nr ___ uS/cm DO ___ nr ___ mg/L ORP ___ nr ___ mV Turbidity ___ nr ___ NTU

ANALYSIS	Check
SVOC/Pest/PCB	<input checked="" type="checkbox"/>
TAL Metals	<input checked="" type="checkbox"/>
Dioxin	<input checked="" type="checkbox"/>
AVS/SEM	<input type="checkbox"/>
Toxicity Assess.	<input type="checkbox"/>
Benthic Comm. Assessment	<input type="checkbox"/>
Ekman Grabs:	
Chemistry _____	
Toxicity: _____	
BCA: <u>1</u> each	

NOTES/SKETCH:

Estimated Area Sampled _____ ft.²





TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET – SEDIMENT

Site Name: CENTREDALE MANOR
 Tetra Tech NUS Inc. Sample ID: LTX-SD-2072-01

Tetra Tech NUS Job No./PMS 0400-0242
 QC/Replicate Information: _____ (if applicable)

Sample Method/Gear Used: BOWL + SPOON Sediment Depth Collected: 0-0.5 feet

Sample Date & Time: 7/25/2001 0950 hours Duplicate: _____ hours
 (24-hour)

Sampler(s): K. O'Neill D. MacDougall

Form Completed By: [Signature]
 (Signature)

Water Depth: 2.0 ft. Flow: None Low / Moderate / Fast (Circle Appropriate)

How were samples collected? X wading ___ from bank ___ from boat Other _____

Type of Sample: (Check all that apply)

- Stream/River
- Wetland
- Pond
- Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Composite

Other: _____
 Weather: _____

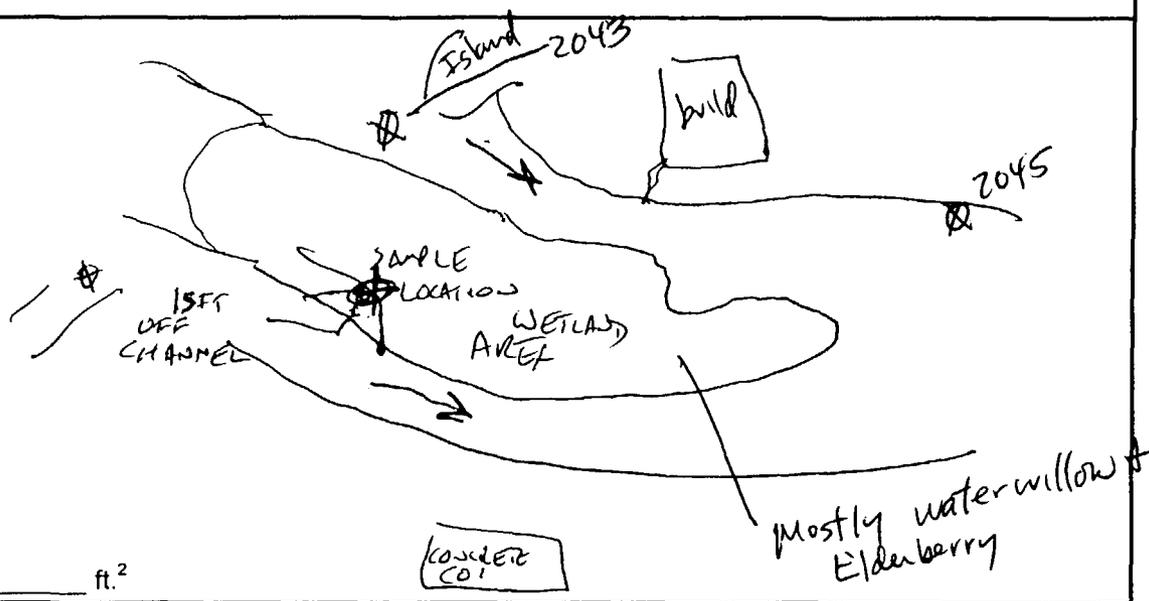
Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)
ORGANIC SILT SANDY SILT 100
PODDING LIKE 7/26/01

*include DIUF lot # in "other" above

Surface Water Quality: Temp. ___ not recorded ___ °C pH nr Spec. Cond. ___ nr ___ uS/cm DO ___ nr ___ mg/L ORP ___ nr ___ mV Turbidity ___ nr ___ NTU

ANALYSIS	Check
SVOC/Pest/PCB	<input checked="" type="checkbox"/> (2)
TAL Metals	<input checked="" type="checkbox"/>
Dioxin	<input checked="" type="checkbox"/>
AVS/SEM	
Toxicity Assess.	
Benthic Comm. Assessment	
Ekman Grabs:	
Chemistry	
Toxicity	
BCA: 1 each	

NOTES/SKETCH:



Estimated Area Sampled _____ ft.²



TETRA TECH NUS, INC.

FIELD SAMPLE DATA SHEET - SEDIMENT

Site Name: CENTREDALE MANOR
 Tetra Tech NUS Inc. Sample ID: WRL-AQ-RB01-02

Tetra Tech NUS Job No./PMS #400-0242
 QC/Replicate Information: Rinsate - sediment (if applicable)

Sample Method/Gear Used: ^{S/S} bowl - direct pour Sediment Depth Collected: N/A feet
 Sample Date & Time: 7/25/2001 1100 hours Duplicate: _____ hours
 (24-hour)
 Sampler(s): K. O'Neill D. MacDougall
 Form Completed By: Kevin O'Neill
 (Signature)

Water Depth: N/A ft. Flow: None / Low / Moderate / Fast (Circle Appropriate)
 How were samples collected? ___ wading ___ from bank ___ from boat Other N/A

Type of Sample: (Check all that apply)

- Stream/River
- Wetland
- Pond
- Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Composite

Other: _____
 Weather: _____

Sediment Description: (Sand, Silt, Mud, Muck, Peat, Etc.)

*include DIUF lot # in "other" above

Surface Water Quality: Temp. ___ not recorded ___ °C pH nr Spec. Cond. ___ nr ___ uS/cm DO ___ nr ___ mg/L ORP ___ nr ___ mV Turbidity ___ nr ___ NTU

ANALYSIS	Check	NOTES/SKETCH:
SVOC/Pest/PCB	<input checked="" type="checkbox"/>	Note: 94° F outside 2-50 DIUF water at ambient temperature 12
TAL Metals	<input checked="" type="checkbox"/>	
Dioxin	<input checked="" type="checkbox"/>	
AVS/SEM	<input type="checkbox"/>	
Toxicity Assess.	<input type="checkbox"/>	
Benthic Comm. Assessment	<input type="checkbox"/>	
Ekman Grabs: Chemistry _____ Toxicity: _____	<input type="checkbox"/>	
BCA: 1 each	<input type="checkbox"/>	Estimated Area Sampled _____ ft. ²